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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			RICHARDS, N DREW	
			ART UNIT	PAPER NUMBER
			2815	

DATE MAILED: 05/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/028,768

Applicant(s)

CHAE, GEE SUNG

Examiner

N. Drew Richards

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7, 8 and 21-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5, 7, 8, 22 and 27 is/are allowed.
- 6) ☒ Claim(s) 1, 3, 4, 21, 23, 25 and 26 is/are rejected.
- 7) ☒ Claim(s) 2 and 24 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/17/06 has been entered.

2. All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

### ***Product-by-Process Limitations***

3. While not objectionable, the Office reminds Applicant that "product by process" limitations in claims drawn to structure are directed to the product, per se, no matter how actually made. *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also, *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wethheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); *In re Marosi et al.*, 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or otherwise. Note that applicant has the burden of proof in such cases, as the above case law makes clear. Thus, no patentable weight will be given to those process steps which do not add structural limitations to the final product.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 3, 4, 21, 23, 25 and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Song et al. (U.S. Patent No. 6,531,392 B2).

Song et al. disclose a liquid crystal display device in figure 4, for example, comprising:

- a substrate 10;
- a gate electrode 26 over the substrate;
- a first semiconductor layer 42 over the substrate; and
- a source electrode 56/76 and a drain electrode 55/75 over the first semiconductor layer 42, the source and drain electrodes having a first metal layer 55/56 and a second metal layer 75/76 formed in a same pattern and defining and forming a separation between the source and drain electrode;
- wherein the second metal layer is adapted to be a dry etching mask to pattern the first metal layer so that etched sidewalls of the first and second metal layer are substantially aligned instead of being over-etched.

The second metal layer is "adapted to" be a dry etching mask to pattern the first metal layer since the second metal layer overlies the first metal layer. It is noted that in the claim to the device, the dry etching step or using the second metal layer as a mask need not be actually performed. In this case, the second metal layer is configured in such a manner that it is capable of being used as a dry etching mask for the first metal

layer and thus the metal layers anticipate the claimed structure. The limitation of the first metal layer being patterned by dry etching process using the second metal layer as a mask is a product-by-process limitation that does not structurally distinguish over the prior art. The first and second metal layers are disclosed as being in the same pattern with substantially aligned side-walls and thus read on the structure as claimed regardless of the method by which it was fabricated.

The limitation of the etched side-walls being aligned instead of over-etched is met by Song et al. since figure 4 shows the side-walls aligned and not over-etched.

With regard to claim 3, the first metal layer includes molybdenum (column 8 lines 64-66, when the first metal layer is the dual layered structure it includes molybdenum silicide).

With regard to claim 4, the second metal layer includes aluminum (column 9 lines 16-20).

With regard to claim 21, Song et al. further disclose an ohmic contact layer 65/66 over the first semiconductor layer, wherein inner edges of the ohmic contact layer 65/66 facing the separation space are aligned with inner edges of the first metal layer (as seen in figure 4 the inner edges of layers 55/65/75/56/66/76 are aligned).

With regard to claim 23, Song et al. disclose a liquid crystal display device in figure 4, for example, comprising:

- a substrate 10;

- a gate electrode 26 over the substrate;
- a first semiconductor layer 42 over the substrate;
- an ohmic contact layer 65/66 over the first semiconductor layer;
- a source electrode 56/76 and a drain electrode 55/75 over the first semiconductor layer 42, the source and drain electrodes including a first metal layer 55/56 and a second metal layer 75/76 formed in a same pattern and defining a separation between the source and drain electrodes;
- wherein the second metal layer is adapted to be a dry etching mask to pattern the first metal layer so that etched sidewalls of the first and second metal layer are substantially aligned instead of being over-etched; and
- wherein inner edges of the ohmic contact layer 65/66 facing the separation space are aligned with inner edges of the first metal layer (as seen in figure 4 the inner edges of layers 55/65/75/56/66/76 are aligned).

The second metal layer is "adapted to" be a dry etching mask to pattern the first metal layer since the second metal layer overlies the first metal layer. It is noted that in the claim to the device, the dry etching step or using the second metal layer as a mask need not be actually performed. In this case, the second metal layer is configured in such a manner that it is capable of being used as a dry etching mask for the first metal layer and thus the metal layers anticipate the claimed structure. The limitation of the first metal layer being patterned by dry etching process using the second metal layer as a mask is a product-by-process limitation that does not structurally distinguish over the prior art. The first and second metal layers are disclosed as being in the same pattern

with substantially aligned side-walls and thus read on the structure as claimed regardless of the method by which it was fabricated.

The limitation of the etched side-walls being aligned instead of over-etched is met by Song et al. since figure 4 shows the side-walls aligned and not over-etched.

With regard to claim 25, the first metal layer includes molybdenum (column 8 lines 64-66, when the first metal layer is the dual layered structure it includes molybdenum silicide).

With regard to claim 26, the second metal layer includes aluminum (column 9 lines 16-20).

#### ***Allowable Subject Matter***

6. Claims 2 and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. Claims 5, 7, 8, 22 and 27 are allowed.

#### ***Response to Arguments***

8. Applicant's arguments filed 3/17/06 have been fully considered but they are not persuasive.



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Applicant has repeated, word for word, all of their arguments from the response filed 1/17/06. These arguments were fully responded to in the Advisory Action mailed 1/30/06. These arguments are still not persuasive for the reasons stated in the Advisory Action as reproduced below.

"Applicant has argued that the prior art does not teach the second metal layer being adapted to be a dry etching mask to pattern the first metal layer. In discussing this limitation and the language used therein, applicant refers to the *In re Venezia* decision. Applicant discusses how the *In re Venezia* decision teaches that language such as "adapted to" is not only definite under 35 USC 112, second paragraph, but also can be used to properly define structural features. In the Examiner's previous response, the Examiner noted that the arguments dealing with the definiteness of the "adapted to" language were moot. Applicant's present response takes issue with the Examiner's statement by stating that the examiner denied applicant fundamental substantive and procedural due process. This is not the case as the Examiner did consider all arguments previously filed and found them to be not persuasive. The Examiner used the term "moot" to signify that the portions dealing with the definiteness issues were not pertinent to patentability of the present claims as the present claims have been considered definite. The Examiner did not intend the use of the term "moot" to imply that the arguments were being dismissed out of hand without proper consideration.

Further, in consideration of the "adapted to" language used in the present claims, the Examiner appreciates applicant's point that language such as "adapted to" can be properly used to define structural features of their invention. The examiner does not disagree with this point. However, in regards to the "adapted to" language of the instant claims, the examiner's position is that this language does not define structure that differentiates the claimed structure over the structure of the prior art. Applicant has claimed that the second metal layer is adapted to be a dry etching mask to pattern the first metal layer. This limitation is considered taught by Song et al. The second metal layer 75/76 of Song et al. is formed in the same pattern as the first metal layer 55/56, defines the same separation between the source and drain electrode as the first metal layer, and has side-walls that are aligned with the first metal layer. Since the second metal layer of Song et al. includes the structure necessitated to allow it to be a dry-etching mask, it is considered "adapted to be a dry etching mask" as claimed. It is noted that Applicant has not particularly pointed out what structural features the second metal layer of Song et al. is alleged to lack such that it is not "adapted to" be a dry etching mask.

Applicant further argues that the masks of Song et al. are layers 300, 400 and 500, none of which is the second metal layer. This argument is not persuasive since the claim language does not preclude the use of other masking structures during the fabrication process.

Applicant further argues that the outstanding Office Action provides no factual evidence that because the second metal layer is above the first metal layer, the second metal layer is adapted to be a dry etching mask. Applicant states that the only objective evidence in Song et al. itself, and Song et al. do not teach the second metal layer being adapted to be a dry etching mask. First, it is noted that since the Office Action established a prime facie case of anticipation that Song et al. discloses all the claimed limitations, the burden has been shifted to the applicant to provide evidence or a showing that the second metal layer of Song et al. is not "adapted to" be a dry etching mask. Regardless, further objective evidence that is already of record can be found in figure 7, for example, of Applicant's specification. Figure 7 shows that the second metal layer 36a1 or 36a2 that is "adapted to be a dry etching mask." As seen in figure 7, the second metal layer is formed directly on the first metal layer, defines a separation between the source and drain electrodes in the same pattern as the first metal layer, and has side-walls that are aligned to side-walls of the first metal layer. Thus, these structural features are considered the structural limitations of the "adapted to" claim language. Song et al. anticipates the claims since Song et al. disclose the second metal layer is formed directly on the first metal layer, defines a separation between the source and drain electrodes in the same pattern as the first metal layer, and has side-walls that are aligned to side-walls of the first metal layer, as seen in figure 4 for example.

Applicant further argues, and basis previous arguments upon this point, that Song et al. does not disclose its second metal layer is adapted to be used as a dry etching mask to pattern the first metal layer. This is not persuasive. Even

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though Song et al. does not include explicit language that their second metal layer is adapted to be used as a dry etching mask, the structure disclosed in the figures does include this limitation. The fact that Song et al. does not mention their second metal layer being so adapted does not change the fact that their second metal layer as shown in figure 4 is adapted to be used as a dry etching mask, whether they actually use it as so or not. Applicant further argues that Song teaches away from using the second metal layer as a dry etching mask by using a separate mask. This is not persuasive since the claim language does not require the second metal layer to actually be used as a dry etching mask, merely that it's structure is adapted so that it can be used in such manner. The second metal layer of Song et al. is formed with a structure that is adapted so that it can be used as a dry etching mask as claimed and therefore reads on the claimed invention.

For these reasons, the Examiner has met their initial burden of presenting a prima facie case of unpatentability and applicant's arguments are not persuasive."

Applicant has further briefly presented new arguments in their latest response.

These further arguments have been considered but are not persuasive.

Applicant has argued that the "adapted to" language is not met by Song et al. because Song clearly did not appreciate this positively recited feature as evidenced by the fact that Song has to use the extra mask elements 300, 400 and 500 to make the product and that there is no appreciation by Song that anything other than the mask elements 300, 400 and 500 can be adapted to be used as masks. This is not persuasive. Regardless of whether or not Song uses extra mask elements or appreciates that anything other than the mask elements can be adapted to be used as masks does not change the fact that the structure of the second metal layer of Song (figure 4) meets the claimed structural limitation and has the same structure as the second metal layer of the instant invention. In claims drawn to a device, the method by which the device is formed is immaterial. As such, Song et al. does not need to "appreciate" that the second metal layer can serve as a mask. Song et al. merely has to teach a second metal layer that has a structure such that it could be used as a mask, or could have been used as a mask.

In determining the structure necessitated by the “adapted to” limitation at hand, the Examiner has clearly explained throughout the prosecution how the limitation has been interpreted and has clearly explained what structural features of the second metal layer of Song et al. exist which allow it to be considered “adapted to” be an etching mask. Applicant has at no point in the prosecution pointed out what actual structure, shape, dimension or arrangement of Song et al.’s second metal layer is absent such that it does not meet the claimed limitation. If the “adapted to” limitation is intended to impart some further structure to the second metal layer, different than that shown in figure 4 of Song et al., applicant should particularly point out the missing structure. Merely arguing that Song et al. fails to state the “adapted to” language or is silent as to the issue, is not a persuasive argument to overcome the showing in Song et al. figure 4 of the second metal layer having the same features as the applicant’s disclosed second metal layer.

Applicant also argues that “the Examiner is not treating the “adapted to” language as imparting a structural limitation to the sleeve.” This argument is not well understood since a “sleeve” is nowhere recited in the instant claims or specification.

### ***Conclusion***

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within


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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to N. Drew Richards whose telephone number is (571) 272-1736. The examiner can normally be reached on Monday-Friday 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Parker can be reached on (571) 272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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